

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P243438

Luminaire Tested: **S123RDR-H1165D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243438
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-69)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123RDR-H1165D840-X4F0-XX-UDD-A-W
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4285.9 lumens
Efficiency: N/A
Efficacy: 113.7 lumens/watt
Spacing Criteria (0/90/45): 1.28 / 1.22 / 1.4
Luminous Opening: Rectangular (W 3.88' x L: 0.23' x H: 0')
CIE Type: Direct

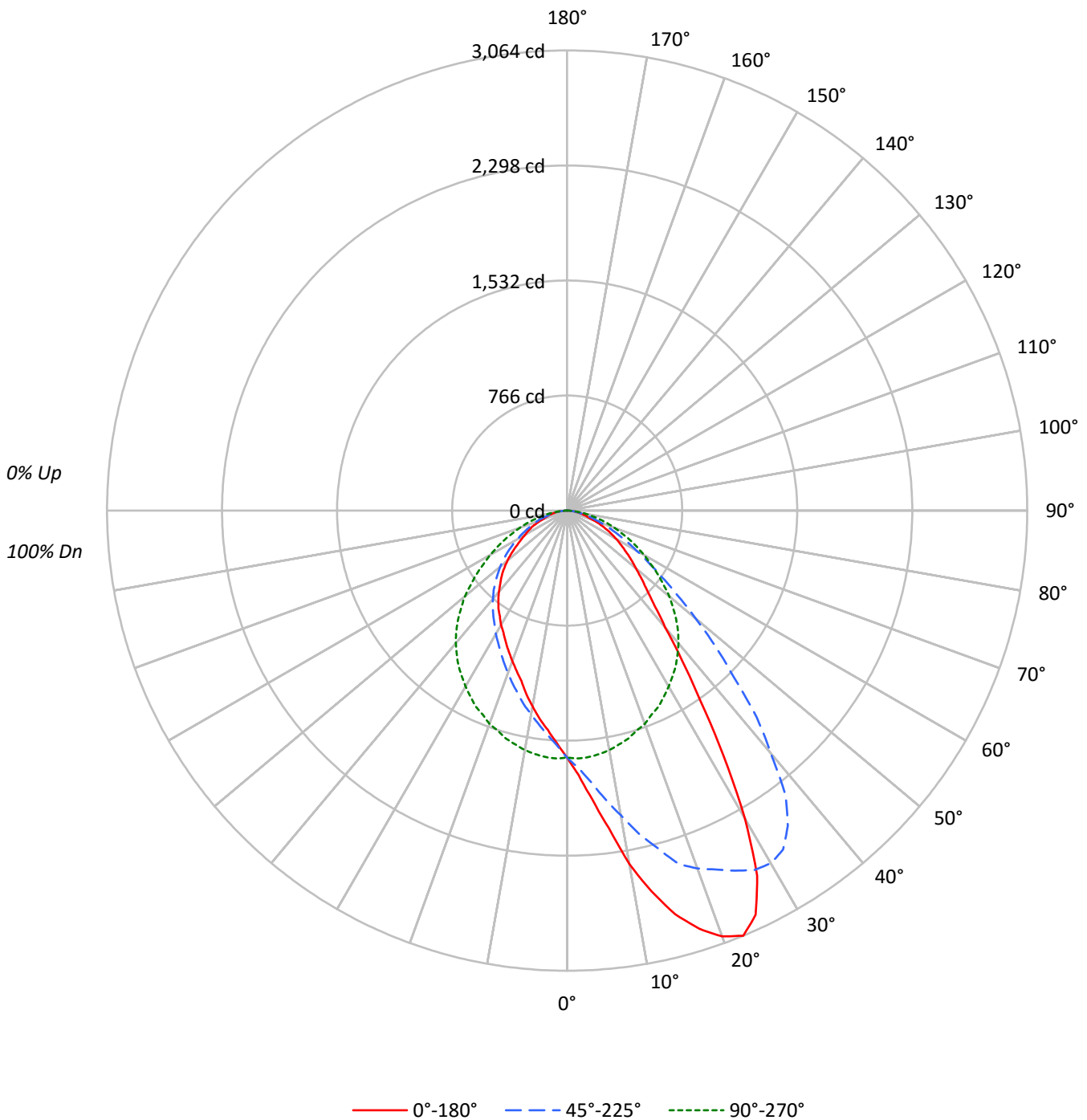
Input Watts (W): 37.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					20					
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	89					87				
2	101	94	88	83	99	92	86	82	89	84	80	85	81	78	82	79	76					74				
3	93	84	76	70	91	82	75	70	79	73	68	76	71	67	74	70	66					64				
4	86	75	67	61	84	74	66	60	71	65	59	69	63	59	67	62	58					56				
5	79	68	59	53	77	66	59	53	64	57	52	62	56	52	61	55	51					49				
6	74	61	53	47	72	60	52	47	59	52	46	57	51	46	55	50	46					44				
7	69	56	48	42	67	55	47	42	54	47	41	52	46	41	51	45	41					39				
8	64	51	43	38	62	51	43	37	49	42	37	48	42	37	47	41	37					35				
9	60	47	39	34	59	47	39	34	45	39	34	44	38	34	43	38	33					32				
10	56	44	36	31	55	43	36	31	42	35	31	41	35	31	40	35	31					29				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	19938	19938	19938
5°	23505	20048	17853
10°	29424	19931	16295
15°	34918	19732	14759
20°	38917	19494	13741
25°	39723	19254	12937
30°	33101	18927	12307
35°	22868	18665	11792
40°	16070	18239	11171
45°	12904	17593	10568
50°	11250	16755	9777
55°	10087	15505	8705
60°	9125	14325	7886
65°	7985	13199	7374
70°	6443	11880	6241
75°	5587	10345	6121
80°	5158	8823	6150
85°	4548	7107	5340



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	161.3	3.8
10°-20°	508.0	11.9
20°-30°	814.0	19.0
30°-40°	883.7	20.6
40°-50°	757.1	17.7
50°-60°	573.9	13.4
60°-70°	366.7	8.6
70°-80°	175.3	4.1
80°-90°	46.0	1.1
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	1483.3	34.6
0°-40°	2366.9	55.2
0°-60°	3697.8	86.3
0°-90°	4285.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4285.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1645	1645	1645	1645	1645	
5°	1932	1813	1648	1498	1467	198
15°	2783	2326	1572	1263	1176	789
25°	2970	2646	1440	1045	967	1318
35°	1545	2562	1261	856	797	993
45°	753	1568	1026	678	616	595
55°	477	768	734	485	412	430
65°	278	370	460	293	257	277
75°	119	145	221	139	131	129
85°	33	34	51	40	38	37
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9
2.5°	1762.8	1764.9	1761.3	1760.6	1759.9	1748.6	1745.0	1739.3	1719.4	1714.5	1710.9
5°	1931.8	1926.1	1932.5	1920.4	1906.9	1899.1	1886.3	1857.9	1833.1	1813.2	1800.4
7.5°	2132.1	2134.2	2127.8	2116.5	2089.5	2078.1	2043.3	2009.2	1976.5	1935.4	1904.8
10°	2390.6	2373.6	2377.1	2341.6	2313.2	2279.1	2231.5	2176.8	2119.3	2061.1	2017.7
12.5°	2596.6	2608.6	2600.1	2583.1	2528.4	2495.0	2451.7	2372.1	2281.2	2203.1	2137.1
15°	2782.6	2766.3	2768.4	2727.2	2707.4	2676.8	2605.1	2526.3	2467.3	2326.0	2247.8
17.5°	2919.0	2917.6	2915.5	2880.7	2856.5	2792.6	2719.4	2638.5	2564.6	2466.6	2368.6
20°	3017.0	3027.7	3024.8	2996.4	2953.8	2892.0	2848.0	2747.1	2625.7	2536.2	2416.2
22.5°	3063.9	3064.6	3066.0	3052.5	3024.1	2984.3	2921.8	2840.9	2732.9	2586.6	2453.1
25°	2970.1	2973.7	2992.2	3003.5	3011.3	2993.6	2960.9	2887.8	2794.7	2645.6	2507.1
27.5°	2740.0	2751.4	2772.0	2840.2	2867.9	2906.2	2919.7	2890.6	2821.7	2697.4	2539.7
30°	2365.0	2397.0	2416.9	2494.3	2603.0	2705.2	2753.5	2801.1	2794.7	2712.3	2552.5
32.5°	1936.1	1956.7	2014.2	2097.3	2183.2	2333.1	2500.7	2615.7	2680.4	2676.1	2563.2
35°	1545.4	1575.3	1624.3	1687.5	1806.1	1961.6	2151.3	2332.4	2494.3	2561.8	2521.3
37.5°	1254.2	1257.1	1303.3	1392.7	1466.6	1603.7	1774.8	1998.6	2210.9	2387.1	2426.1
40°	1015.6	1035.5	1059.6	1115.8	1203.1	1334.5	1448.1	1668.3	1888.5	2109.4	2267.0
42.5°	865.0	865.0	892.0	927.5	985.8	1064.6	1200.3	1399.8	1598.0	1869.3	2046.9
45°	752.8	759.9	772.0	794.7	835.9	897.0	1002.1	1137.8	1340.2	1568.2	1835.2
47.5°	671.9	671.2	681.8	695.3	727.3	773.4	835.2	945.3	1095.2	1340.9	1576.7
50°	596.6	599.4	607.2	618.6	639.9	672.6	711.6	794.7	921.2	1115.8	1362.9
52.5°	538.3	537.6	544.0	551.1	567.5	585.9	620.7	682.5	769.9	924.7	1130.0
55°	477.3	480.1	487.9	492.2	505.7	517.8	546.9	581.7	652.0	768.5	955.2
57.5°	424.7	428.3	432.5	436.8	446.0	458.1	482.2	503.5	554.7	638.5	787.6
60°	376.4	375.0	380.0	387.1	392.0	402.7	416.2	438.2	473.7	533.4	642.7
62.5°	328.1	328.8	329.5	333.8	343.0	352.3	364.3	380.7	402.0	446.0	523.4
65°	278.4	279.1	280.5	284.8	294.0	299.7	312.5	326.7	343.7	370.0	424.0
67.5°	234.4	237.2	237.2	240.8	244.3	250.0	259.2	269.9	284.1	303.3	338.1
70°	181.8	181.1	184.7	191.8	195.3	205.3	211.6	218.7	231.5	243.6	273.4
72.5°	146.3	146.3	146.3	149.1	149.9	152.0	156.2	171.2	181.1	193.2	209.5
75°	119.3	120.0	120.0	120.7	121.4	123.6	125.0	129.3	132.1	144.9	154.8
77.5°	95.2	95.9	95.9	96.6	97.3	98.0	100.9	100.9	103.0	105.8	110.1
80°	73.9	73.2	73.2	73.9	73.9	76.0	76.0	77.4	78.1	79.5	81.7
82.5°	52.6	51.8	52.6	51.8	52.6	53.3	54.7	54.0	55.4	56.8	57.5
85°	32.7	33.4	33.4	34.8	34.1	33.4	34.1	34.1	34.1	34.1	35.5
87.5°	14.2	15.6	15.6	14.9	15.6	15.6	14.2	15.6	15.6	15.6	16.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9
2.5°	1708.8	1705.9	1695.3	1685.4	1670.4	1664.0	1655.5	1652.0	1640.6	1625.0	1617.9
5°	1788.3	1767.0	1746.4	1721.6	1701.0	1676.8	1663.3	1647.7	1623.6	1601.5	1585.9
7.5°	1872.9	1841.6	1803.3	1762.1	1725.1	1690.3	1660.5	1635.6	1604.4	1573.8	1549.7
10°	1965.9	1912.6	1850.8	1798.3	1745.0	1694.6	1656.9	1619.3	1578.8	1540.5	1511.3
12.5°	2066.0	1990.7	1916.2	1837.3	1757.8	1699.6	1643.5	1595.2	1549.7	1509.2	1474.4
15°	2169.7	2066.7	1971.6	1882.8	1772.0	1693.9	1632.1	1572.4	1515.6	1465.9	1431.8
17.5°	2243.6	2125.7	2005.7	1880.0	1784.8	1688.2	1611.5	1536.2	1483.7	1432.5	1386.4
20°	2311.8	2178.2	2035.5	1918.3	1785.5	1667.6	1583.8	1511.3	1438.2	1383.5	1344.4
22.5°	2340.9	2220.1	2076.0	1913.3	1780.5	1659.8	1551.8	1470.2	1404.8	1345.2	1294.0
25°	2346.6	2211.6	2063.9	1906.9	1761.3	1630.7	1521.3	1439.6	1354.4	1292.6	1252.8
27.5°	2371.4	2186.8	2041.9	1885.6	1737.9	1601.5	1486.5	1395.6	1316.0	1250.0	1198.9
30°	2377.8	2176.1	1995.0	1845.9	1693.9	1560.4	1443.9	1352.3	1265.6	1198.1	1152.0
32.5°	2380.7	2161.9	1946.0	1782.7	1637.8	1512.1	1405.5	1306.1	1223.7	1152.7	1105.1
35°	2370.7	2142.0	1887.1	1710.9	1571.7	1448.1	1349.4	1261.4	1169.7	1103.0	1052.5
37.5°	2331.7	2110.8	1853.7	1627.1	1494.3	1377.8	1294.0	1207.4	1122.9	1050.4	998.6
40°	2257.8	2065.3	1791.2	1556.8	1406.2	1301.8	1223.7	1152.7	1067.5	997.9	946.7
42.5°	2139.9	2003.5	1733.6	1477.3	1318.9	1220.2	1154.8	1093.7	1017.0	951.0	894.9
45°	1965.2	1916.9	1656.9	1396.3	1223.7	1130.7	1073.9	1026.3	956.7	896.3	844.5
47.5°	1776.3	1786.9	1579.5	1313.9	1137.1	1048.3	998.6	956.7	904.1	839.5	791.9
50°	1558.2	1616.5	1470.9	1230.8	1050.4	963.1	914.1	888.5	839.5	785.5	740.8
52.5°	1358.7	1451.0	1360.8	1139.9	965.2	879.3	833.8	808.2	775.6	730.8	685.4
55°	1152.0	1269.2	1203.8	1041.9	878.5	791.9	753.5	733.7	706.7	671.9	630.7
57.5°	980.8	1105.8	1064.6	938.9	794.0	715.9	681.8	659.1	642.7	610.8	577.4
60°	813.2	929.0	912.6	820.3	710.2	635.6	609.4	590.9	577.4	554.0	521.3
62.5°	656.2	768.5	778.4	706.0	628.5	561.1	536.9	524.1	513.5	495.0	465.2
65°	520.6	619.3	639.9	584.5	542.6	491.5	468.0	460.2	452.4	431.1	408.4
67.5°	407.7	485.1	512.1	480.8	451.0	421.2	402.7	392.0	386.4	373.6	358.0
70°	311.8	378.5	401.3	387.8	367.9	356.5	342.3	335.2	329.5	313.2	304.7
72.5°	233.7	279.1	307.5	303.3	299.0	291.2	282.7	280.5	272.0	261.4	253.5
75°	171.2	197.4	223.0	232.2	230.8	233.7	224.4	220.9	215.9	208.1	201.7
77.5°	122.9	138.5	156.2	167.6	173.3	174.0	174.0	171.9	168.3	162.6	157.7
80°	85.2	88.8	105.1	115.8	121.4	125.7	125.7	126.4	122.9	120.7	117.2
82.5°	58.9	61.1	64.6	73.2	80.3	85.2	85.9	85.2	83.8	83.1	78.1
85°	36.9	36.2	36.2	38.4	44.0	49.0	49.7	51.1	50.4	49.7	44.7
87.5°	15.6	15.6	16.3	15.6	17.8	18.5	19.9	23.4	22.7	19.2	17.8
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9	1644.9
2.5°	1613.6	1604.4	1595.9	1586.6	1575.3	1564.6	1563.2	1561.8	1565.3	1558.2	1555.4
5°	1573.8	1556.1	1542.6	1525.6	1513.5	1497.9	1489.3	1487.2	1486.5	1482.2	1476.5
7.5°	1530.5	1511.3	1492.2	1473.0	1453.1	1436.8	1427.5	1422.6	1418.3	1411.2	1405.5
10°	1490.0	1465.9	1445.3	1419.0	1397.7	1376.4	1367.9	1360.8	1356.5	1346.6	1338.8
12.5°	1444.6	1414.0	1391.3	1362.9	1343.7	1325.3	1311.8	1298.3	1288.3	1273.4	1267.0
15°	1404.8	1372.9	1334.5	1317.5	1290.5	1262.8	1247.9	1247.9	1227.3	1215.2	1207.4
17.5°	1351.5	1323.9	1296.9	1262.1	1223.7	1207.4	1190.3	1175.4	1161.2	1157.7	1143.5
20°	1304.7	1272.0	1244.3	1206.7	1171.9	1152.7	1132.8	1116.5	1105.8	1095.9	1088.1
22.5°	1258.5	1225.8	1183.2	1146.3	1122.9	1097.3	1076.0	1061.8	1052.5	1037.6	1030.5
25°	1210.2	1171.2	1132.8	1096.6	1067.5	1045.4	1023.4	1015.6	999.3	991.5	981.5
27.5°	1161.9	1115.0	1078.8	1047.6	1014.9	993.6	978.7	964.5	950.3	946.0	940.3
30°	1107.9	1064.6	1029.8	999.3	968.0	949.6	931.8	919.0	907.0	897.7	891.3
32.5°	1054.0	1017.7	984.4	948.9	920.4	900.6	885.6	874.3	868.6	853.0	847.3
35°	1004.3	967.3	931.8	898.4	875.7	856.5	843.0	832.4	820.3	810.4	804.7
37.5°	953.1	919.7	883.5	855.1	829.5	813.9	799.0	784.8	775.6	769.9	762.8
40°	903.4	867.9	840.2	808.9	786.2	768.5	752.8	742.2	730.8	725.8	716.6
42.5°	856.5	822.4	790.5	762.1	741.5	724.4	709.5	697.4	688.2	679.0	674.0
45°	802.5	772.7	743.6	715.2	696.0	677.6	661.2	650.6	637.8	630.0	627.1
47.5°	757.1	725.8	694.6	668.3	648.4	628.5	615.1	602.3	591.6	583.8	579.5
50°	703.1	674.0	648.4	622.2	603.0	581.7	565.3	553.3	541.2	535.5	528.4
52.5°	657.0	628.5	597.3	573.9	551.8	533.4	518.5	508.5	497.9	489.3	484.4
55°	599.4	571.7	546.9	522.0	500.0	485.1	473.0	456.0	446.7	438.2	424.7
57.5°	549.0	522.7	496.4	472.3	451.7	433.9	419.0	407.7	395.6	389.2	380.0
60°	495.7	468.0	443.9	425.4	402.7	383.5	373.6	360.1	350.1	340.2	337.4
62.5°	443.2	417.6	393.5	374.3	353.7	338.8	326.0	319.6	309.7	301.8	299.0
65°	388.5	367.2	344.5	323.2	310.4	293.3	286.2	275.6	269.9	266.3	265.6
67.5°	334.5	315.3	294.7	278.4	266.3	255.0	246.4	242.2	236.5	232.2	228.7
70°	285.5	267.0	249.3	235.8	226.6	218.0	212.4	204.5	198.9	193.2	185.4
72.5°	237.2	222.3	207.4	196.7	187.5	182.5	174.7	162.6	157.0	155.5	154.8
75°	192.5	176.1	165.5	159.8	151.3	139.2	134.2	132.8	132.1	130.7	130.7
77.5°	148.4	138.5	131.4	119.3	115.1	114.3	110.8	110.1	108.7	109.4	109.4
80°	108.0	102.3	93.7	90.2	88.8	89.5	88.1	88.8	87.4	88.1	86.6
82.5°	71.7	66.8	68.2	66.1	66.1	67.5	66.8	64.6	64.6	63.9	63.9
85°	42.6	41.9	43.3	43.3	42.6	40.5	41.9	41.2	39.1	39.8	39.8
87.5°	18.5	18.5	18.5	17.8	18.5	17.8	17.8	17.8	15.6	15.6	15.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P243438

CATALOG NUMBER: S123RDR-H1165D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	1644.9	1644.9	1644.9	1644.9
2.5°	1556.8	1555.4	1553.3	1551.1
5°	1476.5	1470.2	1469.4	1467.3
7.5°	1401.3	1398.4	1393.5	1399.1
10°	1332.4	1334.5	1329.5	1323.9
12.5°	1260.6	1256.4	1248.6	1252.8
15°	1197.4	1190.3	1186.1	1176.1
17.5°	1131.4	1125.7	1125.7	1119.3
20°	1073.9	1068.2	1069.6	1065.3
22.5°	1025.6	1021.3	1014.9	1015.6
25°	980.1	973.7	966.6	967.3
27.5°	929.7	924.0	922.6	917.6
30°	884.9	880.0	879.3	879.3
32.5°	841.6	839.5	835.9	833.8
35°	804.0	801.1	795.4	796.9
37.5°	757.1	754.3	753.5	752.8
40°	713.1	710.9	705.2	706.0
42.5°	669.0	665.5	661.9	660.5
45°	621.4	620.7	615.1	616.5
47.5°	576.0	574.6	571.7	568.2
50°	525.6	524.9	522.7	518.5
52.5°	476.6	474.4	470.2	465.9
55°	421.2	414.8	415.5	411.9
57.5°	375.7	372.9	367.2	365.1
60°	331.7	328.8	328.1	325.3
62.5°	294.7	291.9	289.8	289.8
65°	261.4	257.8	257.1	257.1
67.5°	224.4	220.9	220.2	218.7
70°	178.3	177.6	176.1	176.1
72.5°	153.4	152.7	153.4	150.6
75°	130.7	130.0	130.0	130.7
77.5°	108.7	108.7	108.0	108.0
80°	85.9	86.6	85.9	88.1
82.5°	64.6	63.2	63.9	62.5
85°	39.8	39.8	38.4	38.4
87.5°	15.6	15.6	15.6	15.6
90°	0.0	0.0	0.0	0.0

(END OF REPORT)